

Submission under 37 C.F.R. §1.114
Application No. 10/719,020
Attorney Docket No. 032130

REMARKS

(1) Claims 20, 22-26 and 32 are pending in the application, of which claim 20 has been amended, and claim 32 has been added.

(2) The title was objected to because the title refers to subject matter that is no longer claimed. §§1,2 of the Office Action mailed on February 6, 2008. The title has been corrected. Withdrawal of the objection is respectfully requested.

(3) Claims 20 and 23-25 were rejected under 35 U.S.C. §102(b) as being anticipated by Atobe (JP 59-50190). §3 of the Office Action mailed on February 6, 2008. The Examiner states that the term “copper foil” would encompass foil made of copper and copper alloys. §10 of the Office Action mailed on February 6, 2008.

In response, claim 20 has been amended to recite “a foil of copper,” which excludes foil made of copper alloys. Thus, the rejection on amended claim 20 under 35 U.S.C. §102(b) is not supported by Atobe. Withdrawal of the rejection is respectfully requested.

(3) Claims 20 and 22-26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rice et al. in view of Kazonovtse et al. §9 of the Office Action mailed on February 6, 2008.

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(i) The Examiner states that Applicants could provide an additional declaration to establish that the flow conditions were the same in all of the presented examples. §12 of the Office Action mailed on February 6, 2008.

Applicants herewith file a declaration under 37 CFR §1.132 (“2nd Declaration”). Mr. Matsuda declared that the flow conditions were the same in all of Examples 1-5 and Comparative Examples 1-4. §5 of the declaration. Thus, Examples 1-5 should be compared with Comparative Examples 1-4 to find unexpected results.

(ii) In response to the previous Applicants’ argument, the Examiner states as follows:

While applicant has provided evidence that plating solutions having the claimed amounts of nickel sulfamate provide preferred plated films, the comparative baths may have far less total nickel in comparison to the inventive examples, which may explain the differences in plating properties. Kazonovste teaches roughly 200 g/l of all nickel species, including about 150 g/l of nickel sulfamate. It is unclear how the evidence shows that plated layers resulting from solutions having amounts of nickel sulfamate outside of the claimed range but total nickel amounts comparable to those claimed are different from those of applicant that have claimed amounts of nickel sulfamate.

§12 of the Office Action mailed on February 6, 2008. Emphasis added. It appears that the Examiner sums up all the nickel species included in the Kazonovtse’s plating bath (120-140 g/l of nickel sulfamate and 45-55 g/l of nickel chloride). However, the teaching by Kazonovtse et al. is 120-140 g/l of nickel sulfamate. Claim 20 does not recite a concentration of all nickel species,

but to recite “providing a plating bath comprising: nickel sulfamate at a concentration of 300 to 600g/l....” It is not a proper analysis to sum up all nickel species included in the Kazonovtse’s plating bath. The concentration of nickel sulfamate disclosed by Kazonovtse et al. should be compared with the claimed concentration of nickel sulfamate.

Comparative Example 3 (150g/l of nickel sulfamate) is closer to the present invention than the examples disclosed by Kazonovtse et al. Thus, Comparative Example 3 is the closest prior art. Comparison of Comparative Example 3 with Examples 1-5 shows the unexpected results of the claimed method over the reference.

(iii) In response to the previous Applicants’ argument, the Examiner states as follows:

Finally, the presented evidence relates to a copper foil with Rz of 2.1 microns. Applicant teaches that layer resistance is affected by layer thickness and that thickness variation depends on underlying surface roughness. See Specification (paragraph bridging pages 9 and 10). Hence, it is unclear how applicant has demonstrated that the observed preferred performance would be obtained for surfaces rougher than Rz of 2.1 microns. Therefore, rejections are maintained.

§12 of the Office Action mailed on February 6, 2008. The Examiner’s statement here seems to be directed to claim 30, which was cancelled in the Response filed on June 27, 2007. Thus, the Examiner’s statement here does not support the reason to maintain the rejection.

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(iv) In view of the above, Applicants rebut all the reasons by the Examiner to maintain the 103(a) rejection stated in §12 of the Office Action mailed on February 6, 2008. Thus, Applicants request to reconsider the 103(a) rejection.

As argued previously, unexpected results are found in the appearance of the circuit board material, the 3σ thickness and the 3σ resistance. The values of “ $3\sigma P\%$,” “ 3σ thickness,” and “ 3σ resistance” in Examples 1-5 were much smaller than those of Comparative Example 1-4. Neither Rice et al. nor Kazonovtse et al. teaches using nickel sulfamate at the claimed concentration. The claimed range exhibits unexpected results, so that the method recited in claim 20 is not obvious over Rice et al. in view of Kazonovtse et al. Reconsideration of the rejection is respectfully requested.

(5) Newly added claim 32 is supported at page 9, line 15. Newly added claim 32 depends on claim 20. Newly added claim 32 is not obvious over the references.

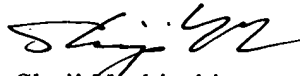
(6) In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims are in condition for allowance. Applicants request such action at an early date.

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If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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Attachment: Limited Recognition
Declaration under 37 CFR §1.132